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Security Council

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Note by the President of the Security Council

At its 6335th meeting, held on 9 June 2010 in connection with the item entitled "Non-proliferation", the Security Council adopted resolution 1929 (2010).

In paragraph 4 of the resolution, the Security Council requested the Director General of the International Atomic Energy Agency to communicate to the Security Council all his reports on the application of safeguards in the Islamic Republic of Iran.

Accordingly, the President circulates herewith the report of the Director General dated 5 September 2014 (see annex).

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Annex

Letter dated 5 September 2014 from the Director General of the International Atomic Energy Agency addressed to the President of the Security Council

I have the honour to enclose herewith the report requested by the Security Council in its resolution 1929 (2010), which I have submitted to the Board of Governors of the International Atomic Energy Agency.

I should be grateful if you would bring the present letter and the report (see enclosure) to the attention of the members of the Security Council.

(*Signed*) Yukiya **Amano**

Enclosure

[Original: Arabic, Chinese, English, French, Russian and Spanish]

Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran*

Report by the Director General

Main Developments

- Iran has: implemented one of the five practical measures that it agreed with the Agency in May 2014 in the third step of the Framework for Cooperation by the agreed deadline of 25 August 2014; implemented two of the five measures after the deadline; and begun discussions with the Agency on the other two practical measures.
- The Agency requested that Iran propose new practical measures by 2 September 2014 to be implemented by Iran in the next step in relation to the Framework for Cooperation. New practical measures have yet to be proposed.
- The Agency has continued to undertake monitoring and verification in relation to the nuclear related measures set out in the Joint Plan of Action (JPA), as extended.
- Since the JPA took effect, Iran has not enriched UF_6 above 5% U-235 at any of its declared facilities. As a result of downblending and conversion that has taken place over the same period, Iran no longer has a stock of UF_6 enriched up to 20% U-235.
- While enrichment of UF_6 up to 5% U-235 continues at a rate of production similar to that indicated in the Director General's previous reports, as Iran has begun converting some of this nuclear material at the Enriched UO_2 Powder Plant (EUPP), the amount of such nuclear material that remains in the form of UF_6 enriched up to 5% U-235 has decreased to 7765 kg.
- No additional major components have been installed at the IR-40 Reactor and there has been no manufacture and testing of fuel for the reactor.
- Iran has continued to provide the Agency with managed access to centrifuge assembly workshops, centrifuge rotor production workshops and storage facilities.

* Circulated to the Board of Governors of the International Atomic Energy Agency under the symbol GOV/2014/43.

A. Introduction

1. This report of the Director General to the Board of Governors and, in parallel, to the Security Council, is on the implementation of the NPT Safeguards Agreement[1] and relevant provisions of Security Council resolutions in the Islamic Republic of Iran (Iran). It contains information, inter alia, regarding the implementation of measures under the "Joint Statement on a Framework for Cooperation" (the Framework for Cooperation) and the Joint Plan of Action (JPA), as extended.[2]

2. The Security Council has affirmed that the steps required by the Board of Governors in its resolutions[3] are binding on Iran.[4] The relevant provisions of the aforementioned Security Council resolutions[5] were adopted under Chapter VII of the United Nations Charter and are mandatory, in accordance with the terms of those resolutions.[6] The full implementation of Iran's obligations is needed in order to ensure international confidence in the exclusively peaceful nature of its nuclear programme.

3. As previously reported, on 11 November 2013 the Agency and Iran signed a "Joint Statement on a Framework for Cooperation" (GOV/INF/2013/14). In the Framework for Cooperation, the Agency and Iran agreed to cooperate further with respect to verification activities to be undertaken by the Agency to resolve all present and past issues, and to proceed with such activities in a step by step manner. The practical measures agreed to date in relation to the Framework for Cooperation are listed in Annex I.

4. As previously reported, in a separate development, on 24 November 2013 China, France, Germany, the Russian Federation, the United Kingdom and the United States of America (E3+3) agreed on the JPA with Iran. The JPA, inter alia, stated that the "goal for these negotiations is to reach a mutually agreed long-term comprehensive solution that would ensure Iran's nuclear programme will be exclusively peaceful".[7,8] According to the JPA, which took effect on 20 January 2014, the first step would be time bound (six months) and renewable by mutual consent. As requested by the E3+3 and Iran, and endorsed by the Board of Governors (subject to the availability of funds), the Agency undertook the necessary nuclear-related monitoring and verification activities in relation to the JPA, involving activities additional to those already being carried out pursuant to Iran's Safeguards Agreement and relevant provisions of Security Council resolutions.

5. On 24 July 2014, the E3/EU+3 and Iran informed the Agency of the extension of the JPA until 24 November 2014 and requested it to continue to undertake the

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[1] The Agreement between Iran and the Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons (INFCIRC/214), which entered into force on 15 May 1974.

[2] GOV/INF/2014/18.

[3] Between September 2003 and September 2012, the Board of Governors adopted 12 resolutions in connection with the implementation of safeguards in Iran (see GOV/2013/56, footnote 2).

[4] Security Council resolution 1929 (2010).

[5] GOV/2013/56, footnote 4.

[6] Part I.A of the Agency's Relationship Agreement with the United Nations (INFCIRC/11).

[7] GOV/2014/2, para. 2.

[8] The JPA also stated that a Joint Commission would work with the Agency to "facilitate resolution of past and present issues of concern".

necessary nuclear related monitoring and verification activities in relation to the JPA, "including monitoring of fuel fabrication" for the Tehran Research Reactor (TRR), and downblending of Iran's UF_6 "enriched up to 2%".[9]

6. Based on the endorsement by the Board of Governors, at its meeting on 24 January 2014, of the Agency undertaking monitoring and verification in relation to the nuclear-related measures set out in the JPA, the Agency will continue to implement such monitoring and verification in relation to the JPA, as extended. In this regard, an additional sum of one million euros was required for the continuation of the Agency's monitoring and verification activities in relation to the extension of the JPA.[10] As of the beginning of September 2014, approximately 0.3 million euros had been pledged.

7. This report addresses developments since the Director General's previous report (GOV/2014/28), as well as issues of longer standing.[11]

B. Clarification of Unresolved Issues

8. The Board of Governors, in its resolution of November 2011 (GOV/2011/69), stressed that it was essential for Iran and the Agency to intensify their dialogue aimed at the urgent resolution of all outstanding substantive issues for the purpose of providing clarifications regarding those issues, including access to all relevant information, documentation, sites, material and personnel in Iran. In its resolution of September 2012 (GOV/2012/50), the Board of Governors decided that Iranian cooperation with Agency requests aimed at the resolution of all outstanding issues was essential and urgent in order to restore international confidence in the exclusively peaceful nature of Iran's nuclear programme.

9. Since the Director General's previous report and as requested by the Agency, Iran has provided some additional clarifications in respect of the practical measure in the second step of the Framework for Cooperation that relates to exploding bridge wire (EBW) detonators (see para. 65 below). On the basis of its analysis of the information provided by Iran in relation to the other six practical measures in the second step, the Agency currently has not identified any outstanding issues in relation to that information.

10. As part of the effort to advance high-level dialogue and to further cooperation between the Agency and Iran, the Director General held meetings in Tehran on 17 August 2014 with the President of the Islamic Republic of Iran, H.E. Hassan Rouhani, the Vice-President and Chairman of the Atomic Energy Organization of Iran, H.E. Ali Akbar Salehi, and the Minister for Foreign Affairs, H.E. Mohammad Javad Zarif. In these meetings, the Director General stressed the importance of the timely implementation of the Framework for Cooperation. The Director General noted Iran's statement of its firm commitment, expressed at a high level, to the implementation of the Framework for Cooperation. The Director General further noted Iran's stated willingness to accelerate the resolution of all outstanding issues.

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[9] GOV/INF/2014/18, para. 1.

[10] GOV/INF/2014/18, para. 4.

[11] The Director General continues to provide the Board of Governors with monthly updates on Iran's implementation of "voluntary measures" undertaken in relation to the JPA, the seventh of which was provided in GOV/INF/2014/19.

11. In relation to EBW detonators, the Director General noted that Iran had provided information and explanations to the Agency on Iran's decision in early 2000 to develop safe detonators. He noted that Iran had also provided information and explanations to the Agency on Iran's work after 2007 related to the application of EBW detonators in the oil and gas industry which was not inconsistent with specialized industry practices. The Director General further noted that the Agency would need to consider all past outstanding issues, including EBW detonators, integrating all of them in a "system" and assessing the "system" as a whole.

12. During technical meetings in Tehran on 16 and 17 August 2014, Iranian and Agency officials discussed how to move ahead with the existing practical measures, including the five practical measures in the third step of the Framework for Cooperation agreed in May 2014. The Agency also proposed discussions on new practical measures, to be taken up as the next step in the Framework for Cooperation.

13. On 25 August 2014, the Agency wrote four letters to Iran aimed at moving the process forward. The Agency proposed, inter alia, that a meeting be held in Tehran before the end of August to allow Iran and the Agency to address the five practical measures in the third step of the Framework for Cooperation. The Agency also invited Iran to propose new practical measures to address the concerns expressed by the Agency in the Annex to GOV/2011/65.

14. Iran has implemented three of the five practical measures agreed with the Agency in the third step of the Framework for Cooperation, two of which were implemented after the agreed deadline of 25 August 2014, as follows:

- Provided mutually agreed information and arranged a technical visit to a centrifuge research and development centre (on 30 August 2014).
- Provided mutually agreed information and managed access to centrifuge assembly workshops, centrifuge rotor production workshops and storage facilities (the most recent of which took place on 18, 19 and 20 August 2014).
- Concluded the safeguards approach for the IR-40 Reactor (on 31 August 2014).

The Agency confirms that Iran has implemented these practical measures in the third step of the Framework for Cooperation and the Agency is analysing the information provided by Iran.

15. In a letter dated 28 August 2014, Iran, inter alia, indicated its readiness to host a technical meeting with the Agency in Tehran on 31 August 2014. At this meeting, Iran began discussions with the Agency on the other two practical measures in the third step of the Framework for Cooperation relating to the initiation of high explosives and to neutron transport calculations (see Annex I). It was agreed that another technical meeting would be convened.

16. In its aforementioned letter of 28 August 2014, Iran also proposed that a road map be developed before any new measures are identified. In its reply dated 4 September 2014, the Agency reiterated its invitation to Iran (see para. 13 above) to propose new practical measures in relation to the Framework for Cooperation, in order to address the concerns expressed by the Agency in the Annex to GOV/2011/65, without further delay. New practical measures have yet to be proposed.

17. Iran's engagement with the Agency, including the provision of information, and the Agency's ongoing analysis are helping the Agency to gain a better understanding of Iran's nuclear programme.

C. Facilities Declared under Iran's Safeguards Agreement

18. Under its Safeguards Agreement, Iran has declared to the Agency 18 nuclear facilities and nine locations outside facilities where nuclear material is customarily used (LOFs)[12] (Annex II). Notwithstanding that certain of the activities being undertaken by Iran at some of the facilities are contrary to the relevant resolutions of the Board of Governors and the Security Council, as indicated below, the Agency continues to verify the non-diversion of declared nuclear material at these facilities and LOFs.

D. Enrichment Related Activities

19. Contrary to the relevant resolutions of the Board of Governors and the Security Council, Iran has not suspended all of its enrichment related activities in the declared facilities referred to below. However, since 20 January 2014, Iran has not produced UF_6 enriched above 5% U-235 and all of its stock of UF_6 enriched up to 20% U-235 has been further processed through downblending or conversion. All of the enrichment related activities at Iran's declared facilities are under Agency safeguards, and all of the nuclear material, installed cascades, and feed and withdrawal stations at those facilities are subject to Agency containment and surveillance.[13]

20. Iran has stated that the purpose of enriching UF_6 up to 5% U-235 is the production of fuel for its nuclear facilities.[14] Iran has also stated that the purpose of enriching UF_6 up to 20% U-235 is the manufacture of fuel for research reactors.[15]

21. Since Iran began enriching uranium at its declared facilities, it has produced at those facilities:

- 12 772 kg (+795 kg since the Director General's previous report) of UF_6 enriched up to 5% U-235, of which 7765 kg (–710 kg since the Director General's previous report)[16] remain in the form of UF_6 enriched up to 5% U-235[17] and the rest has been further processed (see Annex III); and

[12] All of the LOFs are situated within hospitals.

[13] In line with normal safeguards practice, small amounts of nuclear material (e.g. some waste and samples) may not be subject to containment and surveillance.

[14] As declared by Iran in its design information questionnaires (DIQs) for the Fuel Enrichment Plant (FEP) at Natanz.

[15] GOV/2010/10, para. 8; and as declared by Iran in its DIQ for the Fuel Plate Fabrication Plant (FPFP).

[16] These figures include 115.6 kg of UF_6 enriched up to 5% U-235 that has been produced from the downblending of UF_6 enriched up to 20% U-235.

[17] This comprises nuclear material in storage as well as nuclear material in the cold traps and inside cylinders still attached to the enrichment process.

- Up to the point at which it stopped producing UF_6 enriched up to 20% U-235, 447.8 kg of such nuclear material, all of which has been further processed through downblending or conversion into uranium oxide[18] (see Annex III).

D.1. Natanz

22. **Fuel Enrichment Plant:** FEP is a centrifuge enrichment plant for the production of low enriched uranium (LEU) enriched up to 5% U-235, which was first brought into operation in 2007. The plant is divided into Production Hall A and Production Hall B. According to the design information submitted by Iran, eight units, each containing 18 cascades, are planned for Production Hall A, which totals approximately 25 000 centrifuges in 144 cascades. Currently, one unit contains IR-2m centrifuges; five contain IR-1 centrifuges; and the other two units do not contain centrifuges. Iran has yet to provide the corresponding design information for Production Hall B.

23. In the unit containing IR-2m centrifuges, as of 13 August 2014, the situation remained unchanged from the Director General's previous report: six cascades had been fully installed with IR-2m centrifuges;[19] none of these cascades had been fed with natural UF_6; and preparatory installation work had been completed for the other 12 IR-2m cascades in the unit.

24. In the five units containing IR-1 centrifuges, as of 13 August 2014, the situation remained unchanged from the Director General's previous report: 90 cascades had been fully installed,[20] of which 54 were being fed with natural UF_6.[21] As previously reported, preparatory installation work had been completed for 36 IR-1 cascades in the two units not containing centrifuges.

25. As of 12 August 2014, Iran had fed 141 513 kg of natural UF_6 into the cascades at FEP since production began in February 2007 and produced a total of 12 464 kg of UF_6 enriched up to 5% U-235.

26. On 17 August 2014, Iran informed the Agency that it would downblend about 4118 kg of UF_6 enriched up to 2% U-235 to natural uranium.[22]

27. Based on the results of the analysis of environmental samples taken at FEP,[23] and other verification activities, the Agency has concluded that the facility has operated as declared by Iran in the relevant design information questionnaire (DIQ).

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[18] Apart from 0.6 kg of UF_6 enriched up to 20% U-235, which is under Agency seal at Iran's declared enrichment facilities where the nuclear material had been used as reference material for mass spectrometry.

[19] The number of IR-2m centrifuges installed at FEP (1008) was also unchanged.

[20] The number of IR-1 centrifuges installed at FEP (15 420) was also unchanged.

[21] GOV/2014/10, para. 22. The Agency has applied additional containment and surveillance measures to confirm that no more than the 54 IR-1 cascades (containing 9156 centrifuges) are being fed with nuclear material at FEP.

[22] This relates to one of Iran's undertakings in the JPA. The nuclear material originates from the tails produced by the enrichment of UF_6 up to 20% U-235 and from nuclear material evacuated from the cascades producing UF_6 enriched up to 5% U-235, and is not included in the amount of UF_6 enriched up to 5% U-235 indicated in para. 25.

[23] Results are available to the Agency for samples taken up to 14 May 2014.

28. **Pilot Fuel Enrichment Plant:** PFEP is a pilot LEU production, and research and development (R&D) facility that was first brought into operation in October 2003. It can accommodate six cascades, and is divided between an area designated by Iran for the production of UF_6 enriched up to 20% U-235 (Cascades 1 and 6) and an area designated by Iran for R&D (Cascades 2, 3, 4 and 5).

29. ***Production area:*** As indicated in the Director General's previous report, Iran has ceased feeding Cascades 1 and 6 with UF_6 enriched up to 5% U-235 and is feeding them with natural UF_6 instead.[24] On 8 February 2014, Iran provided an update to parts of the DIQ in which it stated that it had taken measures "due to change in level of enrichment" and that the measures "are temporarily taken during the first step implementation of the JPA".[25] Since the JPA took effect, Iran has not operated Cascades 1 and 6 in an interconnected configuration.[26]

30. As of 20 January 2014, when it ceased production of UF_6 enriched up to 20% U-235, Iran had fed 1630.8 kg of UF_6 enriched up to 5% U-235 into Cascades 1 and 6 since production began in February 2010 and had produced a total of 201.9 kg of UF_6 enriched up to 20% U-235, all of which has since been withdrawn from the process and verified by the Agency. Between 20 January 2014 and 18 August 2014, Iran fed 519.2 kg of natural UF_6 into Cascades 1 and 6 at PFEP and produced a total of 49.7 kg of UF_6 enriched up to 5% U-235.

31. ***R&D area:*** Since the Director General's previous report, Iran has been intermittently feeding natural UF_6 into IR-6s centrifuges as single machines and into IR-1, IR-2m, IR-4 and IR-6 centrifuges, sometimes into single machines and sometimes into cascades of various sizes.[27] The single installed IR-5 centrifuge has yet to be fed with UF_6. As previously reported, the Agency confirms that a "casing" remains in place but without connections.[28]

32. Between 6 May 2014 and 18 August 2014, a total of approximately 397.8 kg of natural UF_6 was fed into centrifuges in the R&D area, but no LEU was withdrawn as the product and the tails were recombined at the end of the process.

33. Between 20 January 2014 and 20 July 2014, Iran downblended 108.4 kg of its inventory of UF_6 enriched up to 20% U-235.[29]

34. Based on the results of the analysis of environmental samples taken at PFEP,[30] and other verification activities, the Agency has concluded that the facility has operated as declared by Iran in the relevant DIQ.

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[24] As of 26 August 2014, Cascades 1 and 6 contained a total of 328 IR-1 centrifuges (unchanged).

[25] Iran and the E3/EU+3 have since agreed to extend the JPA.

[26] GOV/2014/10, para. 28. The Agency has applied additional containment and surveillance measures to confirm that Cascades 1 and 6 are not interconnected.

[27] On 26 August 2014, there were 14 IR-4 centrifuges, seven IR-6 centrifuges, one IR-5 centrifuge, one IR-2m centrifuge, three IR-1 centrifuges and no IR-6s centrifuges installed in Cascade 2; 14 IR-1 centrifuges and ten IR-4 centrifuges installed in Cascade 3; 164 IR-4 centrifuges installed in Cascade 4; and 162 IR-2m centrifuges installed in Cascade 5.

[28] GOV/2014/10, para. 30.

[29] By 20 July 2014, in line with the JPA, the downblending process had been completed.

[30] Results are available to the Agency for samples taken up to 9 April 2014.

D.2. Fordow

35. **Fordow Fuel Enrichment Plant:** FFEP is, according to the DIQ of 18 January 2012, a centrifuge enrichment plant for the production of UF_6 enriched up to 20% U-235 and the production of UF_6 enriched up to 5% U-235.[31] The facility, which was first brought into operation in 2011, is designed to contain up to 2976 centrifuges in 16 cascades, divided between Unit 1 and Unit 2. To date, all of the centrifuges installed are IR-1 machines. On 8 February 2014, Iran provided an update to parts of the DIQ in which it stated that it had taken measures "due to change in level of enrichment" and that the measures "are temporarily taken during the first step implementation of the JPA".[32]

36. As indicated in the Director General's previous report, Iran has ceased feeding UF_6 enriched up to 5% U-235 into the four cascades of Unit 2 previously used for this purpose and is feeding them with natural UF_6 instead. Since the JPA took effect, Iran has not operated these cascades in an interconnected configuration.[33] None of the other 12 cascades in FFEP had been fed with UF_6.[34]

37. As a result of the physical inventory verification (PIV) carried out by the Agency at FFEP between 18 January and 2 February 2014, the Agency verified, within measurement uncertainties normally associated with such a facility, the inventory of nuclear material as declared by Iran on 20 January 2014.

38. As of 20 January 2014, when it ceased production of UF_6 enriched up to 20% U-235, Iran had fed 1806 kg of UF_6 enriched up to 5% U-235 into the cascades at FFEP since production began in December 2011 and had produced a total of 245.9 kg of UF_6 enriched up to 20% U-235, all of which has since been withdrawn from the process and verified by the Agency. Between 20 January 2014 and 17 August 2014, Iran fed 1349.7 kg of natural UF_6 into the cascades at FFEP and produced a total of 142.7 kg of UF_6 enriched up to 5% U-235.

39. Based on the results of the analysis of environmental samples taken at FFEP,[35] and other verification activities, the Agency has concluded that the facility has operated as declared by Iran in the relevant DIQ.

D.3. Other Enrichment-Related Activities

40. Iran continues to provide the Agency with regular managed access to centrifuge assembly workshops, centrifuge rotor production workshops and storage facilities.[36] Such access, as well as associated mutually agreed information, was also provided by Iran pursuant to one of the practical measures agreed in relation to

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[31] GOV/2009/74, paras. 7 and 14; GOV/2012/9, para. 24. Iran has provided the Agency with an initial DIQ and three revised DIQs with different stated purposes for FFEP. In light of the difference between the original stated purpose of the facility and the purpose for which it is now being used, additional information from Iran is still required.

[32] Iran and the E3/EU+3 have since agreed to extend the JPA.

[33] GOV/2014/10, para. 36. The Agency has applied additional containment and surveillance measures at FFEP to confirm that only the four IR-1 cascades are used to enrich UF_6 and that they are not interconnected.

[34] The number of centrifuges installed at FFEP (2710) was also unchanged.

[35] Results are available to the Agency for samples taken up to 19 May 2014.

[36] This relates to one of Iran's undertakings in the JPA.

the Framework for Cooperation (see para. 14 above). As part of this managed access, Iran has also provided the Agency with an inventory of centrifuge rotor assemblies to be used to replace those centrifuges that fail. The Agency has analysed the information provided by Iran and, upon request, has received additional clarifications. Since the JPA took effect, based on analysis of all the information provided by Iran, as well as the managed access and other verification activities carried out by the Agency, the Agency can confirm that centrifuge rotor manufacturing and assembly are consistent with Iran's replacement programme for damaged centrifuges.[37]

41. Pursuant to one of the practical measures agreed in relation to the third step of the Framework for Cooperation (see para. 14 above), Iran provided mutually agreed information and arranged a technical visit by the Agency to a centrifuge research and development centre, which the Agency carried out on 30 August 2014.

E. Reprocessing Activities

42. Iran is required, pursuant to the relevant resolutions of the Board of Governors and the Security Council, to suspend its reprocessing activities, including R&D.[38] As previously reported, Iran stated in January 2014 that "during the first step time-bound (six months), Iran will not engage in stages of reprocessing activities, or construction of a facility capable of reprocessing".[39] In a letter to the Agency dated 27 August 2014, Iran indicated that this "voluntary measure" had been extended in line with the extension of the JPA.

43. The Agency has continued to monitor the use of hot cells at TRR[40] and the Molybdenum, Iodine and Xenon Radioisotope Production (MIX) Facility.[41] The Agency carried out a PIV and a design information verification (DIV) at TRR on 12 August 2014, and a DIV at the MIX Facility on 13 August 2014. The Agency can confirm that there are no ongoing reprocessing related activities with respect to TRR, the MIX Facility and the other facilities to which the Agency has access in Iran.

F. Heavy Water Related Projects

44. Contrary to the relevant resolutions of the Board of Governors and the Security Council, Iran has not suspended work on all heavy water related projects.[42] However, since the JPA took effect, Iran has neither installed any major components at the IR-40 Reactor nor produced nuclear fuel assemblies for the IR-40 Reactor at the Fuel Manufacturing Plant (FMP) (see para. 57 below).

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[37] This relates to one of Iran's undertakings in the JPA.

[38] GOV/2013/56, footnote 28.

[39] This relates to one of Iran's undertakings in the JPA.

[40] The TRR is a 5 MW reactor which operates with 20% U-235 enriched fuel and is used for the irradiation of different types of targets and for research and training purposes.

[41] The MIX Facility is a hot cell complex for the separation of radiopharmaceutical isotopes from targets, including uranium, irradiated at TRR.

[42] GOV/2013/56, footnote 32.

45. **IR-40 Reactor:** The IR-40 Reactor, which is under Agency safeguards, is a 40 MW heavy water moderated research reactor designed to contain 150 fuel assemblies containing natural uranium in the form of UO_2.

46. On 11 August 2014, the Agency carried out a DIV at the IR-40 Reactor and observed that, since the Director General's previous report, none of the reactor's remaining major components had been installed.[43] Pursuant to one of the practical measures agreed in relation to the Framework for Cooperation, as indicated earlier (para. 14 above), on 31 August 2014 Iran concluded with the Agency a safeguards approach for the IR-40 Reactor.

47. **Heavy Water Production Plant:** The Heavy Water Production Plant (HWPP) is a facility for the production of heavy water with a design capacity to produce 16 tonnes of reactor-grade heavy water per year.

48. As previously reported, although the HWPP is not under Agency safeguards, the plant was subject to managed access by the Agency on 8 December 2013.[44] During the managed access, Iran also provided the Agency with mutually agreed relevant information. In addition, access to the heavy water storage location at the Uranium Conversion Facility (UCF) at Esfahan has enabled the Agency to characterize the heavy water.[45]

G. Uranium Conversion and Fuel Fabrication

49. Iran is conducting a number of activities at UCF, EUPP, FMP and the Fuel Plate Fabrication Plant (FPFP) at Esfahan, as indicated below, which are in contravention of its obligations to suspend all enrichment related activities and heavy water related projects, notwithstanding that the facilities are under Agency safeguards.

50. Since Iran began conversion and fuel fabrication at its declared facilities, it has, inter alia:

- Produced 550 tonnes of natural UF_6 at UCF, of which 163 tonnes have been transferred to FEP.
- Transferred four tonnes of natural UF_6 from UCF to EUPP.[46] In addition, 4.3 tonnes of UF_6 enriched up to 5% U-235 have been transferred from FEP to EUPP.
- Fed into the conversion process at EUPP 1505 kg of UF_6 enriched up to 5% U-235.
- Fed into the R&D conversion process at UCF 53 kg of UF_6 enriched to 3.34% U-235 and produced 24 kg of uranium in the form of UO_2.[47]
- Fed into the conversion process at FPFP 337.2 kg of UF_6 enriched up to 20% U-235 (+34.0 kg since the Director General's previous report) and produced 162.3 kg of uranium in the form of U_3O_8.

[43] GOV/2013/56, para. 34.
[44] GOV/2014/10, para. 13.
[45] GOV/2013/56, para. 39.
[46] GOV/2013/40, footnote 44.
[47] GOV/2012/55, para. 35.

51. **Uranium Conversion Facility:** UCF is a conversion facility for the production of both natural UF_6 and natural UO_2 from uranium ore concentrate (UOC). It is planned that UCF will also produce UF_4 from depleted UF_6, and uranium metal ingots from natural and depleted UF_4.

52. On 26 July 2014, Iran informed the Agency that Iran would conduct R&D activities at UCF on uranium recovery from liquid and solid scrap resulting from conversion activities at UCF.

53. Between 17 and 21 May 2014, the Agency conducted a PIV at UCF, the results of which are being evaluated by the Agency.

54. Iran has declared that, as of 10 August 2014, it had produced 13.8 tonnes[48] of natural uranium in the form of UO_2 through the conversion of UOC.[49] The Agency has verified that, as of the same date, Iran had transferred 13.2 tonnes[50] of natural uranium in the form of UO_2 to FMP.

55. **Enriched UO_2 Powder Plant:** EUPP is a facility for the conversion of UF_6 enriched up to 5% U-235 into UO_2 powder.[51] As indicated in the Director General's previous report, Iran began commissioning the facility in May 2014 using natural uranium. As part of the commissioning, as of 30 August 2014, Iran had fed a total of 2790 kg of natural UF_6 into the conversion process and produced 167 kg of uranium in the form of UO_2. In July 2014, the plant began operations, since which time Iran has fed 1505 kg of UF_6 enriched up to 5% U-235 into the conversion process for the production of UO_2.[52]

56. **Fuel Manufacturing Plant:** FMP is a facility for the fabrication of nuclear fuel assemblies for power and research reactors (see Annex III).

57. On 16 and 17 August 2014, the Agency conducted an inspection and a DIV at FMP and verified that Iran had continued its cessation of production of nuclear fuel assemblies using natural UO_2 for the IR-40 Reactor and that all of the fuel assemblies that had been produced previously remained at FMP.

58. **Fuel Plate Fabrication Plant:** FPFP is a facility for the conversion of UF_6 enriched up to 20% U-235 into U_3O_8 and the manufacture of fuel assemblies made of fuel plates containing U_3O_8 (see Annex III).

59. As previously reported, Iran stated in January 2014 that "during the first step of time-bound (six months), Iran declares that there is no reconversion line to reconvert uranium oxide enriched up to 20% U-235 back into UF_6 enriched up to 20% U-235".[53] In a letter to the Agency dated 27 August 2014, Iran indicated that this "voluntary measure" had been extended in line with the extension of the JPA. On 18 and 19 August 2014, the Agency conducted an inspection and a DIV at FPFP during which it confirmed that there was no process line at the plant for the reconversion of uranium oxide into UF_6.

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[48] Unchanged from the figure indicated in the Director General's previous report.

[49] This amount only refers to nuclear material qualified for fuel fabrication.

[50] Unchanged from the figure indicated in the Director General's previous report.

[51] GOV/2013/40, para. 45.

[52] Pursuant to Iran's undertaking under the JPA to convert into oxide "UF_6 newly enriched up to 5% during the six-month period".

[53] This relates to one of Iran's undertakings in the JPA.

60. The Agency has verified that, as of 17 August 2014, Iran had fed a total of 337.2 kg of UF_6 enriched up to 20% U-235 (227.6 kg of uranium) into the conversion process of FPFP and had produced 162.3 kg of uranium in the form of U_3O_8.[54] The Agency also verified that 44.0 kg of uranium were contained in solid and liquid scrap. The remainder of the uranium that was fed into the process remains in the process and in waste.

61. The Agency has verified that, as of 17 August 2014, Iran had produced at FPFP one experimental fuel assembly and 27 TRR-type fuel assemblies. Twenty-six of these fuel assemblies, including the experimental assembly, had been transferred to TRR.

H. Possible Military Dimensions

62. Previous reports by the Director General have identified outstanding issues related to possible military dimensions to Iran's nuclear programme and actions required of Iran to resolve these.[55] The Agency remains concerned about the possible existence in Iran of undisclosed nuclear related activities involving military related organizations, including activities related to the development of a nuclear payload for a missile. Iran is required to cooperate fully with the Agency on all outstanding issues, particularly those which give rise to concerns about the possible military dimensions to Iran's nuclear programme, including by providing access without delay to all sites, equipment, persons and documents requested by the Agency.[56]

63. The Annex to the Director General's November 2011 report (GOV/2011/65) provided a detailed analysis of the information available to the Agency at that time, indicating that Iran has carried out activities that are relevant to the development of a nuclear explosive device. This information is assessed by the Agency to be, overall, credible.[57] The Agency has obtained more information since November 2011 that has further corroborated the analysis contained in that Annex.

64. In February 2012, Iran dismissed the Agency's concerns, largely on the grounds that Iran considered them to be based on unfounded allegations.[58] In a letter to the Agency dated 28 August 2014, Iran stated that "most of the issues" in the Annex to GOV/2011/65 were "mere allegations and do not merit consideration".

65. As indicated above (para. 9), one of the seven practical measures agreed in the second step of the Framework for Cooperation on 20 May 2014 was the provision by Iran of "information and explanations for the Agency to assess Iran's stated need or application for the development of Exploding Bridge Wire detonators".[59] In this regard, as indicated in the Director General's previous report, Iran provided the Agency with information and explanations in April 2014 and additional information and explanations in May 2014, including showing documents, to substantiate its stated need for the development of EBW detonators and their application. At a

[54] 65.2 kg of this nuclear material has been used for the production of fuel items for TRR.

[55] For example: GOV/2011/65, paras. 38-45 and Annex; GOV/2011/29, para. 35; GOV/2011/7, Attachment; GOV/2010/10, paras. 40-45; GOV/2009/55, paras. 18-25; GOV/2008/38, paras. 14-21; GOV/2008/15, paras. 14-25 and Annex; GOV/2008/4, paras. 35-42.

[56] Security Council resolution 1929, paras. 2 and 3.

[57] GOV/2011/65, Annex, Section B.

[58] GOV/2012/9, para. 8.

[59] GOV/2014/10, para. 14.

technical meeting in Tehran on 16 August 2014, the Agency asked for additional clarifications, certain of which Iran provided.

66. During the technical meetings on 16 and 17 August 2014, the Agency and Iran also held discussions on the practical measures relating to the initiation of high explosives and to neutron transport calculations. As indicated above (para. 15), at the technical meeting in Tehran on 31 August 2014, the Agency and Iran began discussions on these two practical measures and agreed that another meeting would be convened.

67. Since the Director General's previous report, at a particular location at the Parchin site, the Agency has observed through satellite imagery ongoing construction activity that appears to show the removal/replacement or refurbishment of the site's two main buildings' external wall structures. One of these buildings[60] has also had a section of its roof removed and replaced. Observations of deposits of material and/or debris, and equipment suggest that construction activity has expanded to two other site buildings. These activities are likely to have further undermined the Agency's ability to conduct effective verification.[61] It remains important for Iran to provide answers to the Agency's questions[62] and access to the particular location in question.[63]

68. As indicated in the Director General's previous report and as reiterated by the Director General following his meetings in Tehran on 17 August 2014, the Agency needs to be able to conduct a "system" assessment of the outstanding issues contained in the Annex to GOV/2011/65. This will involve considering and acquiring an understanding of each issue in turn, and then integrating all of the issues into a "system" and assessing that system as a whole.

I. Design Information

69. Under the terms of its Safeguards Agreement and relevant resolutions of the Board of Governors and the Security Council, Iran is required to implement the provisions of the modified Code 3.1 of the Subsidiary Arrangements General Part concerning the early provision of design information.[64]

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[60] GOV/2011/65, Annex, para. 49.

[61] For a list of the most significant developments observed by the Agency at this location between February 2012 and the publication of the Director General's May 2013 report, see GOV/2012/55, para. 44; GOV/2013/6, para. 52; and GOV/2013/27, para. 55.

[62] GOV/2011/65, Annex, Section C; GOV/2012/23, para. 5.

[63] The Agency has information provided by Member States indicating that Iran had constructed a large explosives containment vessel (chamber) at this location in which to conduct hydrodynamic experiments. Such experiments would be strong indicators of possible nuclear weapon development (GOV/2011/65, Annex, paras. 49–51).

[64] In a letter dated 29 March 2007, Iran informed the Agency that it had suspended implementation of the modified Code 3.1 of the Subsidiary Arrangements to its Safeguards Agreement (GOV/INF/2007/8). In accordance with Article 39 of Iran's Safeguards Agreement, agreed Subsidiary Arrangements cannot be changed unilaterally; nor is there a mechanism in the Safeguards Agreement for the suspension of provisions agreed to in the Subsidiary Arrangements. Therefore, the modified Code 3.1, as agreed to by Iran in 2003, remains in force. Iran is further bound by operative para. 5 of Security Council resolution 1929 (2010).

J. Additional Protocol

70. Contrary to the relevant resolutions of the Board of Governors and the Security Council, Iran is not implementing its Additional Protocol. The Agency will not be in a position to provide credible assurance about the absence of undeclared nuclear material and activities in Iran unless and until Iran provides the necessary cooperation with the Agency, including by implementing its Additional Protocol.[65]

K. Other Matters

71. On 12 August 2014, the Agency confirmed that 12 fuel assemblies which had been produced in Iran and which contain uranium that was enriched in Iran up to 20% U-235 were in the core of TRR.[66] On the same date, the Agency observed that the Mini IR-40 prototype fuel assembly was in the storage pool.[67]

72. As of 13 August 2014, the Agency confirms that one fuel plate, containing a mixture of U_3O_8 (up to 20% enriched) and aluminium, remains at the MIX facility, having been transferred from FPFP, and was being used for R&D activities aimed at optimizing the production of ^{99}Mo, ^{133}Xe and ^{132}I isotopes.[68]

73. On 16 and 17 August 2014, the Agency conducted an inspection and a DIV at the Bushehr Nuclear Power Plant, at which time the reactor was operating at 100% of its nominal power.

74. The visa for one member of the Agency team to visit Iran for the technical meeting in Tehran on 31 August 2014 was not issued. This is the third occasion on which this individual has been unable to participate in technical meetings in Tehran as a result of Iran not issuing a visa. For the Agency to be able to address the outstanding issues effectively, it is important that any staff member identified by the Agency with the requisite expertise is able to participate in the Agency's technical activities in Iran.

L. Summary

75. While the Agency continues to verify the non-diversion of declared nuclear material at the nuclear facilities and LOFs declared by Iran under its Safeguards Agreement, the Agency is not in a position to provide credible assurance about the absence of undeclared nuclear material and activities in Iran, and therefore to conclude that all nuclear material in Iran is in peaceful activities.[69]

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[65] Iran's Additional Protocol was approved by the Board of Governors on 21 November 2003 and signed by Iran on 18 December 2003, although it has not been brought into force. Iran provisionally implemented its Additional Protocol between December 2003 and February 2006.

[66] On 12 August 2014, the core of TRR comprised a total of 33 fuel assemblies.

[67] GOV/2013/40, para. 64.

[68] GOV/2013/40, para. 65.

[69] The Board of Governors has confirmed on numerous occasions, since as early as 1992, that para. 2 of INFCIRC/153 (Corr.), which corresponds to Article 2 of Iran's Safeguards Agreement, authorizes and requires the Agency to seek to verify both the non-diversion of nuclear material from declared activities (i.e. correctness) and the absence of undeclared nuclear activities in the State (i.e. completeness) (see, for example, GOV/OR.864, para. 49 and GOV/OR.865, paras. 53-54).

76. Iran has: implemented one of the five practical measures that it agreed with the Agency in the third step of the Framework for Cooperation by the agreed deadline; implemented two of the five measures after the deadline; and begun discussions with the Agency on the other two practical measures.

77. New practical measures to be taken up in the next step in relation to the Framework for Cooperation have yet to be proposed by Iran.

78. The Director General notes Iran's statement of its firm commitment, expressed at a high level, to the implementation of the Framework for Cooperation and of its willingness to accelerate the resolution of all outstanding issues. The timely implementation of the Framework for Cooperation is essential to resolve all outstanding issues.

79. The Agency continues to undertake monitoring and verification in relation to the nuclear-related measures set out in the JPA, as extended.

80. The Director General will continue to report as appropriate.

Annex I

Practical Measures agreed to date by the Agency and Iran in relation to the Framework for Cooperation

FIRST STEP: Six (Initial) Practical Measures, agreed on 11 November 2013

1. Providing mutually agreed relevant information and managed access to the Gchine mine in Bandar Abbas.
2. Providing mutually agreed relevant information and managed access to the Heavy Water Production Plant.
3. Providing information on new research reactors.
4. Providing information with regard to the identification of 16 sites designated for the construction of nuclear power plants.
5. Clarification of the announcement made by Iran regarding additional enrichment facilities.
6. Further clarification of the announcement made by Iran with respect to laser enrichment technology.

SECOND STEP: Seven Practical Measures, agreed on 9 February 2014

1. Providing mutually agreed relevant information and managed access to the Saghand mine in Yazd.
2. Providing mutually agreed relevant information and managed access to the Ardakan concentration plant.
3. Submission of an updated Design Information Questionnaire (DIQ) for the IR-40 Reactor.
4. Taking steps to agree with the Agency on the conclusion of a Safeguards Approach for the IR-40 Reactor.
5. Providing mutually agreed relevant information and arranging for a technical visit to Lashkar Ab'ad Laser Centre.
6. Providing information on source material, which has not reached the composition and purity suitable for fuel fabrication or for being isotopically enriched, including imports of such material and on Iran's extraction of uranium from phosphates.
7. Providing information and explanations for the Agency to assess Iran's stated need or application for the development of Exploding Bridge Wire detonators.

THIRD STEP: Five Practical Measures, agreed on 20 May 2014

1. Exchanging information with the Agency with respect to the allegations related to the initiation of high explosives, including the conduct of large scale high explosives experimentation in Iran.
2. Providing mutually agreed relevant information and explanations related to studies made and/or papers published in Iran in relation to neutron transport

and associated modelling and calculations and their alleged application to compressed materials.

3. Providing mutually agreed information and arranging a technical visit to a centrifuge research and development centre.

4. Providing mutually agreed information and managed access to centrifuge assembly workshops, centrifuge rotor production workshops and storage facilities.

5. Concluding the safeguards approach for the IR-40 Reactor.

Annex II

List of Declared Nuclear Facilities and LOFs in Iran

Tehran:

1. Tehran Research Reactor (TRR)
2. Molybdenum, Iodine and Xenon Radioisotope Production (MIX) Facility
3. Jabr Ibn Hayan Multipurpose Laboratories (JHL)

Esfahan:

4. Miniature Neutron Source Reactor (MNSR)
5. Light Water Sub-Critical Reactor (LWSCR)
6. Heavy Water Zero Power Reactor (HWZPR)
7. Uranium Conversion Facility (UCF)
8. Fuel Manufacturing Plant (FMP)
9. Fuel Plate Fabrication Plant (FPFP)
10. Enriched UO2 Powder Plant (EUPP)

Natanz:

11. Fuel Enrichment Plant (FEP)
12. Pilot Fuel Enrichment Plant (PFEP)

Fordow:

13. Fordow Fuel Enrichment Plant (FFEP)

Arak:

14. Iran Nuclear Research Reactor (IR-40 Reactor)

Karaj:

15. Karaj Waste Storage

Bushehr:

16. Bushehr Nuclear Power Plant (BNPP)

Darkhovin:

17. 360 MW Nuclear Power Plant

Shiraz:

18. 10 MW Fars Research Reactor (FRR)

LOFs:

Nine (all situated within hospitals)

Annex III

Table 1: Summary of UF_6 Production and Flows

	Date	Quantity	Enrichment
Produced at UCF	10 August 2014	550 000 kg	Natural
Fed into FEP, PFEP and FFEP	August 2014	143 382 kg	Natural
Produced at FEP, PFEP and FFEP	August 2014	12 656.4 kg	Up to 5%
Produced by downblending	20 July 2014	115.6 kg	Up to 5%
Fed into PFEP	20 January 2014	1 630.8 kg	Up to 5%
Produced at PFEP	20 January 2014	201.9 kg	Up to 20%
Fed into FFEP	20 January 2014	1 806.0 kg	Up to 5%
Produced at FFEP	20 January 2014	245.9 kg	Up to 20%

Table 2: Inventory of UF_6 Enriched up to 20% U-235

Produced at FFEP and PFEP	447.8 kg
Fed into conversion process	337.2 kg
Downblended	110.0 kg*
Stored as UF_6	0.6 kg**

* The figure includes 1.6 kg that was previously downblended (GOV/2012/55, para. 10).
** See footnote 19 of this report.

Table 3: Conversion at UCF

Conversion process	Quantity produced	Transferred to FMP
UF_6 (~3.4% U-235) into UO_2	24 kg U	24 kg U
Natural UOC into UO_2	13 792 kg U*	13 229 kg U

* Uranium content in material qualified for fuel fabrication.

Table 4: Conversion of UF_6 Enriched up to 20% U-235 into U_3O_8 at FPFP

Feed quantity	Quantity produced
337.2 kg of UF_6 (227.6 kg U)	162.3 kg U

Table 5: Conversion of UF_6 into UO_2 at EUPP

Feed quantity	Quantity produced
2 790 kg of natural UF_6 (1 883 kg U)	167 kg U*
1 505 kg of UF_6 enriched up to 5% U-235 (1 016 kg U)	- *

* The rest of the nuclear material is in different stages of the process.

Table 6: Fuel Manufacturing at FMP

Item	Number produced	Enrichment	Item mass (g U)	Number irradiated
Test fuel rod for IR-40 Reactor	3	Natural uranium	500	1
Test fuel rod	2	3.4%	500	-
Fuel rod assembly	2	3.4%	6 000	1
Mini IR-40 prototype fuel assembly	1	Natural uranium	10 000	1
IR-40 prototype fuel assembly	36	Natural uranium	35 500	Not applicable
IR-40 fuel assembly	11	Natural uranium	56 500	-

Table 7: TRR Fuel Fabrication at FPFP

Item	Number produced	Enrichment	Item mass (g U)	Present at TRR	Irradiated
TRR test plate (Natural Uranium)	4	Natural uranium	5	2	1
TRR test plate	5	19%	75	5	2
TRR control fuel assembly	8	19%	1 000	8	5
TRR standard fuel assembly	18	19%	1 400	17	8
Test assembly (with 8 plates)	1	19%	550	1	-